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(54) SNAP ON CAP/BOTTLE NECK ASSEMBLY
(75) SHAW INDUSTRIES PTY.LTD.
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(74) AH
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(57) CLAIM 1. A container closure assembly including a container neck portion defining a discharge opening and a cap engageable with said neck portion to seal said discharge opening whereby to close said container, said neck portion being provided with upper and lower annular beads, said lower bead extending radially outwardly of said neck portion and the respective outer surfaces of said neck portion adjacent upwardly of said beads being inclined outwardly and downwardly toward the respective said beads, said cap including a downwardly depending skirt the internal surface of said skirt being provided with upper and lower inwardly directed annular projections formed of a resilient deformable material, said upper projection extending radially inwardly of said lower projection in an undeformed state and the distance between said projections being substantially the same as the distance between said annular beads and wherein, in use, said cap is adapted to be placed on said neck portion without deformation with said annular projection being seated on the respective inclined outer surfaces of said neck portion and wherein said projections are adapted to be displaced resiliently outwardly beyond the respective said annular beads as said cap is forced onto said neck portion and to move resiliently inwardly beyond said annular beads to engage with the respective lower sides thereof to maintain said cap in sealing relationship with said neck portion.

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Petty Patent Specification for the invention entitled:

"A CONTAINER CLOSURE ASSEMBLY"

The following statement is a full description of this
invention, including the best method of performing it
known to us:-

THIS INVENTION relates to a container closure assembly, and more particularly to a closure assembly of the snap engagement type and which is commonly used in plastic juice or cream bottles.

5 In known closure assemblies of the above type, a bottle is provided with an annular bead adjacent the upper end of its neck portion which surrounds the dispensing opening and a cap is provided with a depending skirt and an internal lip which is adapted to be engaged with the annular bead and pushed thereover so that the cap is retained to the bottle. This presently known closure assembly suffers a number of disadvantages. In particular, if the tolerances during manufacture of the closure assembly are not maintained, the cap may be made either too large or too small for the neck of the bottle. 10 If the cap is made too large, efficient sealing will not be achieved, thus leakage of contents will occur whilst if the cap is made too small it will be difficult to engage over the annular bead. A further disadvantage is that the abutment surface between the cap lip and annular bead is relatively large and thus any distortion in bead abutment surface will cause distortion of the whole cap and reduce the sealing capacity of the assembly. 15 20

25 The present invention aims to overcome the above disadvantages by providing an improved closure assembly of the snap engagement type which provides a reliable and efficient seal to the contents within the container, which is not subject to close manufacturing tolerance limitations and the respective parts of which may be easily interengaged

Other objects and advantages of the invention will become apparent from the following description.

With the above and other objects in view, the invention resides broadly in a container closure assembly including a container neck portion defining a discharge opening and a cap engageable with said neck portion to close said discharge opening whereby to close said container said neck portion being provided with upper and lower annular beads, said lower bead extending radially outwardly of said upper bead and the respective outer surfaces of said neck portion adjacent and upwardly of said beads being inclined outwardly and downwardly towards the respective said beads, said cap including a downwardly depending skirt the internal surface of said skirt being provided with upper and lower inwardly directed annular projections, said upper projection extending radially inwardly of said lower projection and the distance between said upper projection being substantially the same as the distance between said annular beads and wherein, in use, said cap is adapted to be placed on said neck portion with said annular projections being seated on the respective inclined outer surfaces of said neck portion and wherein said projections are adapted to be displaced resiliently outwardly beyond the respective said annular beads as said cap is forced onto said neck portion and to move resiliently inwardly beyond said annular beads to engage with the respective lower sides thereof to maintain said cap in sealing relationship with said neck portion.

In order that the invention may be more readily

understood reference will now be made to the drawings wherein:-

Fig. 1 is a view of a container and cap incorporating the closure assembly of the present invention, and

5 Fig. 2 is a part sectional side view of the container and cap illustrating the features of the closure assembly.

Referring to the drawings, there is shown a container 10 preferably formed of plastics material and including a neck portion 11 surrounding a discharge opening 12 and a cap 13 which is adapted to be engaged with the neck portion 11 to sealingly close the discharge opening 12. The neck portion 11 of the container as shown more clearly in Fig. 2 is provided on its outer side with a pair of annular beads 14 and 15 with the lower bead 15 being disposed radially outwardly of the upper bead 14. The outer surface of the neck portion is inclined downwardly and outwardly at 16 and 17 towards the upper and lower beads 14 and 15 respectively as shown to define respective camming ramps leading onto the beads. The cap 13 shown in part sectional view in Fig. 2 is also preferably formed of resiliently deformable plastics material and includes a downwardly depending annular skirt 18 the inner surface of which is preferably inclined downwardly and outwardly from the upper substantially circular sealing portion 19 of the cap. The inner surface of the skirt 18 is provided with upper and lower annular inwardly directed projections 21 and 22 with the upper projection 21 being disposed radially inwardly of the lower projection 22. The distance

between the projections 21 and 22 is substantially the same as the distance between the annular beads 14 and 15 respectively. As shown, the projections 21 and 22 are part circular in cross section but they may also be of any other form, for example, of similar form to the beads 14 and 15.

In use, when it is desired to engage the cap 13 with the portion of the container 10 to close the discharge opening 12 the cap 13 is placed on the neck portion 11 of the container so that the projection 21 is resting on the inclined ramp surface 16 and the projection 22 resting on the inclined ramp surface 17. To retain the cap 13 to the neck portion of the container, the cap is forced downward so that the respective annular projections 21 and 22 move along the inclined ramp surface 16 and 17 to be cammed outwardly due to the resilience of the cam skirt until the outer extremities of the respective annular beads 14 and 15 are reached. Further pressure downwardly on the cap will then cause the projections 21 and 22 to pass beyond the annular beads 14 and 15 and resiliently snap in behind the annular beads to engage with the under sides thereof. As shown in Fig. 2, a double abutting sealing action is provided by the respective projection/bead engagement 21/14 and 22/15. As the beads 14 and 15 and projection 21 and 22 are relatively small, variations in manufacturing tolerances can be tolerated without resulting in a loss of sealing efficiency which thus means that wastage in manufacture is eliminated or at least reduced. Further due to the dual engagement, more efficient sealing is

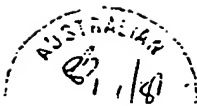
achieved.

Whilst the above has been given by way of illustrative embodiment of the present invention, all such modifications and variations as would be

5 apparent to persons skilled in the art are deemed to fall within the broad scope and ambit of the invention as herein defined by the claim.

THE CLAIM DEFINING THE INVENTION IS AS FOLLOWS

1. A container closure assembly including a container neck portion defining a discharge opening and a cap engageable with said neck portion to seal said discharge opening whereby to close said container, said neck portion being provided with upper and lower annular beads, said lower bead extending radially outwardly of said upper bead and the respective outer surfaces of said neck portion adjacent and upwardly of said beads being inclined outwardly and downwardly towards the respective said beads, said cap including a downwardly depending skirt the internal surface of said skirt being provided with upper and lower inwardly directed annular projections formed of a resiliently deformable material, said upper projection extending radially inwardly of said lower projection in an undeformed state and the distance between said projections being substantially the same as the distance between said annular beads and wherein, in use, said cap is adapted to be placed on said neck portion without deformation with said annular projections being seated on the respective inclined outer surfaces of said neck portion and wherein said projections are adapted to be displaced resiliently outwardly beyond the respective said annular beads as said cap is forced onto said neck portion and to move resiliently inwardly beyond said annular beads to engage with the respective lower sides thereof to maintain said cap in sealing relationship with said



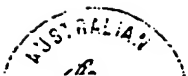
neck portion.

DATED this 11th day of November 1981.

SHAW INDUSTRIES PTY. LTD.
By their Patent Attorneys
T.G. AHEARN & CO.

T.G. Ahearn

(T.G. Ahearn)
Fellow Institute of Patent
Attorneys of Australia



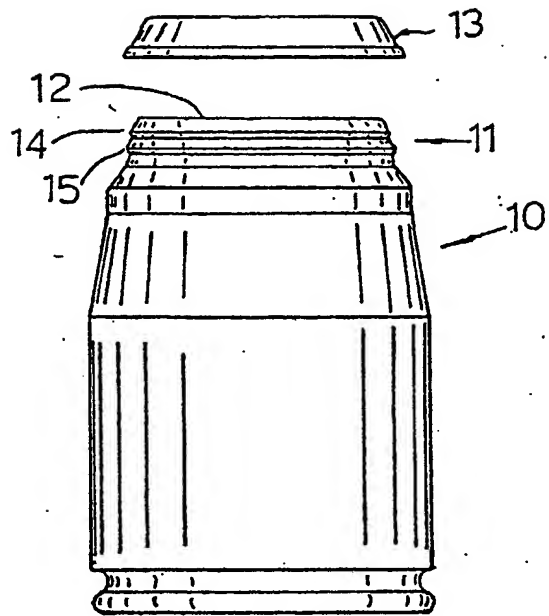


FIG.1

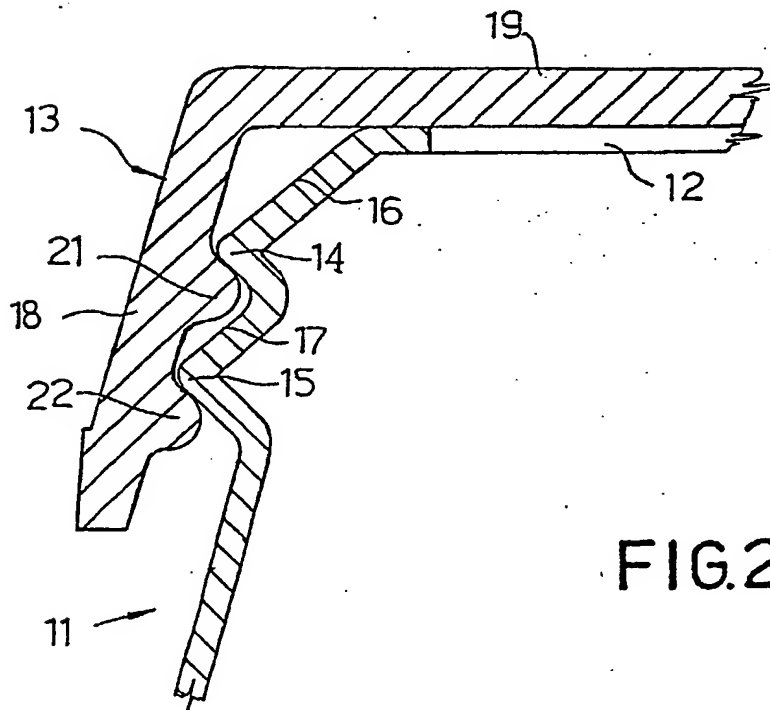


FIG.2

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